



Information Science and Technology Center Seminar



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"Astroinformatics: Data-Oriented Astronomy Research and Education"

Wednesday, July 21, 2010
3:00 - 4:00 PM

TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: The growth of data volumes in science is reaching epidemic proportions. Consequently, the status of data-oriented science as a research methodology is now elevated to that of the more established scientific approaches of experimentation, theoretical modeling, and simulation. Data-oriented scientific discovery is sometimes referred to X-Informatics, where X refers to any science (e.g., Bio-, Geo-, Astro-). We introduce Astroinformatics, the new data-oriented approach to 21st century astronomy research and education. In astronomy, petascale sky surveys will soon challenge our traditional research approaches and will radically transform how we train the next generation of astronomers, whose experiences with data are now increasingly more virtual (through online databases) than physical (through trips to mountaintop observatories). We describe Astroinformatics as a rigorous approach to these challenges. We also describe initiatives in science education (not only in astronomy) through which students are trained to access large distributed data repositories, to conduct meaningful scientific inquiries into the data, to mine and analyze the data, and to make data-driven scientific discoveries. These are essential skills for all 21st century scientists.

Biography: Kirk Borne is Associate Professor of Astrophysics and Computational Science in the George Mason University Department of Computational and Data Sciences and is Affiliate Faculty in the Department of Physics and Astronomy. He received his B.S. degree in physics from LSU and his Ph.D. in astronomy from Caltech. He was a postdoc at the University of Michigan, and a Carnegie Fellow in the Carnegie Institution's Department of Terrestrial Magnetism. He spent nearly 20 years supporting NASA projects, including the Hubble Space Telescope, the Astrophysics Data Facility, and the Space Science Data Operations Office. His astronomical research is in the field of extragalactic astronomy, studying the dynamics and evolution of galaxies. He also has extensive experience in large scientific databases and information systems, including scientific data mining research. He is currently working on the design and development of the proposed Large Synoptic Survey Telescope (LSST). He is a member of the International Statistical Institute's Astrostatistics Executive Board, a member of the LSST Outreach Advisory Board, a member of the Zooniverse Citizen Science Advisory Committee, and chairperson of the new LSST Informatics and Statistics Science Research Collaboration Team.



For more information contact the technical host Frank Alexander, fja@lanl.gov, 665-4518.
If you'd like an appointment to meet with Professor Borne please contact Josephine Olivas, jojo@lanl.gov, 663-5725.
—Hosted by the Information Science and Technology Center (ISTC)—